

It is known that certain radar signatures are often associated with the occurrence of severe weather, e.g., hook echo and tornado, bow echo and downburst, etc. A less well-known type of radar signature is a series of concave (bulge) segments embedded within a squall line associated with tornadoes. Nolen (1959) coined this radar signature "line echo wave pattern (LEWP)". Due to the similarity of the shape of the radar signature and surface damage patterns, LEWP has been classified as bow echo since the bow echo was named in Fujita in late 1970s. In the United States, it has been documented that a bowing segment of radar reflectivity signature can possess one or two rotating Doppler velocity dipoles. The purpose of this talk is to discuss the differences between LEWP and Bow Echo from the single Doppler radar perspective and a series of bow echoes may be evolved from LEWP.

A squall line occurred on 7 June 2003 moved from the southern Taiwan Strait to Ba-Shi Channel and entered the Pacific Ocean. The CWB's Ken-Ting (RCKT) Doppler radar sampled this squall line for 5 hours and documented an interesting evolution from LEWP into a series of bow echoes. This squall line initially possessed LEWP radar signature and resembled bow echoes few hours later. The single Doppler radar data suggested that there were multiple-scale vortices embedded in this squall line and several vortices grew upscale as the squall line evolved from LEWP into a series of bow echo with time.